



Original Articles

Mine is better than yours: Investigating the ownership effect in children with autism spectrum disorder and typically developing children

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ARTICLE INFO

Keywords:

Autism spectrum disorder
Ownership
Ownership effect
Self-understanding
Valuation
Typical development

ABSTRACT

Ownership has a unique and privileged influence on human psychology. Typically developing (TD) children judge *their* objects to be more desirable and valuable than similar objects belonging to others. This ‘ownership effect’ is due to processing one’s property in relation to ‘the self’. Here we explore whether children with autism spectrum disorder (ASD) – a population with impaired self-understanding – prefer and over-value property due to ownership. In Experiment 1, we discovered that children with ASD did not favour a randomly endowed toy and frequently traded for a different object. By contrast, TD children showed a clear preference for their randomly endowed toy and traded infrequently. Both populations also demonstrated highly-accurate tracking of owner-object relationships. Experiment 2 showed that both TD children and children with ASD over-value their toys if they are self-selected and different from other-owned toys. Unlike TD children, children with ASD did not over-value their toys in comparison to non-owned identical copies. This finding was replicated in Experiment 3, which also established that mere ownership elicited over-valuation of randomly endowed property in TD children. However, children with ASD did not consistently regard their randomly endowed toys as the most valuable, and evaluated property irrespective of ownership. Our findings show that mere ownership increases preferences and valuations for self-owned property in TD children, but not children with ASD. We propose that deficits in self-understanding may diminish ownership effects in ASD, eliciting a more economically-rational strategy that prioritises material qualities (e.g. what a toy *is*) rather than whom it belongs to.

1. Introduction

Ownership is a vital cornerstone of human culture (Brown, 1991). Determining ‘who owns what’ is fundamental to myriad social behaviours, ranging from playground disputes to international political decisions (Bloom & Gelman, 2008; Gelman, Manczak, & Noles, 2012; Kalish & Anderson, 2011). Ownership also has a unique and privileged influence on human psychology. We feel deeply connected to our possessions, and there is an undeniable relationship between the property we own and our sense of identity (Belk, 1985, 1991, 2000; Diesendruck & Perez, 2015; James, 1890; Rochat, 2010). Across disciplines, it is argued that property is psychologically influential because establishing ownership causes items to be processed in relation to the ‘psychological self’ (Belk, 1988; Csikszentmihalyi & Rochberg-Halton, 1981; Diesendruck & Perez, 2015; Hood, Weltzien, Marsh, & Kanngiesser, 2016; Sartre, 1956). Thus, ownership understanding may be atypical when the psychological self is impaired. The purpose of the present study is to investigate how Autism Spectrum Disorder (ASD) – a neurodevelopmental disorder characterised by an impaired psychological

sense of self (Frith, 2003; Grisdale, Lind, Eacott, & Williams, 2014; Lind, 2010; Uddin, 2011; Williams, 2010) – impacts the cognitive bias towards self-owned property and evaluations of property owned by others.

Owing to its cultural and psychological salience, ownership understanding normally emerges in early childhood. By 2 years, typically developing (TD) children refer to objects using possessive pronouns (e.g. “mine”, “yours”) and are able to infer owner-object relationships independent of physical possession (Fasig, 2000; Friedman, Van de Vondervoort, Defeyter, & Neary, 2013; Saylor, Ganea, & Vasquez, 2011). By 3–4 years, ownership can be inferred based on a range of heuristics including verbal testimony, first possession, stereotypes, and historical reasoning (Nancekivell, Van de Vondervoort, & Friedman, 2013). Coinciding with this developing knowledge, TD toddlers frequently engage in heated disputes over property access (Hay & Ross, 1982) and subjectively evaluate objects based on historical connections to themselves or other people. In particular, TD children show a ‘mere ownership effect’ – increased valuation and preference for objects simply because they are owned – by 2–5 years (Gelman et al., 2012;

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Harbaugh, Krause, & Vesterlund, 2001; Hood & Bloom, 2008; Hood et al., 2016).

It is widely agreed that TD children form strong emotional attachments to their property (Winnicott, 1969). Hood and Bloom (2008) found that TD children aged 3–6 years were reluctant to let an experimenter “make” an identical copy of a cherished possession, and almost all preferred their authentic objects over replicas. When asked why they preferred the authentic object over the copy, they frequently responded “because it’s mine”. Other studies show that TD children form attachments to property after only brief periods of ownership. Employing a classic resource exchange paradigm, Harbaugh et al. (2001) gave participants aged 5, 10 and 20 years a gift to keep, and then asked if they wished to trade it for an alternative of similar value. Across different pairs of goods, participants were 1.9–2.9 times more likely to keep the item they were initially assigned and this effect did not differ with age. Thus, the preference for self-owned property develops in early childhood and endures into adulthood (for replications of this phenomenon, see Beggan, 1992; Gawronski, Bodenhausen, & Becker, 2007; Kahneman, Knetsch, & Thaler, 1990; Knetsch, 1989; Reb & Connolly, 2007; Thaler, 1980). Gelman et al. (2012) recently found that simply stipulating an ownership relation is sufficient to elicit a preference for novel objects in children as young as 2 years. Remarkably, a reliable preference for self-owned objects was observed even when those objects were relatively unappealing or identical to comparison objects (also see Hood et al., 2016). Taken together, these findings unambiguously demonstrate that ownership “... confers special value, above and beyond an object’s material or functional properties” (Gelman et al., 2012, p. 1733).

The cognitive bias for one’s own property is attributed to our regarding of objects as *extensions of the self* (Belk, 2000; Csikszentmihalyi & Rochberg-Halton, 1981; Diesendruck & Perez, 2015; Morewedge & Giblin, 2015; Sartre, 1956; Winnicott, 1953). The ‘extended-self hypothesis’ posits that an individual’s self-concept incorporates property items – both material (e.g. cherished possessions) and immaterial (e.g. hobbies and interests) – that represent their personal identity (Belk, 1988; Dittmar, 1992; James, 1890). At a psychological level, ownership constitutes an autobiographical attachment between an object and the self that is maintained over time. Once this attachment is forged, the object may be integrated into a person’s extended self-concept and, in turn, an abstract trace of the self may transfer to the object through ‘contamination’ (Argo, Dahl, & Morales, 2008). This mentalistic connection to property explains why self-owned possessions are more memorable, desirable, and judged to be more valuable than similar non-owned items (Cunningham, Vergunst, Macrae, & Turk, 2013; Gelman, Frazier, Noles, Manczak, & Stilwell, 2015; Gelman et al., 2012; Kahneman, Knetsch, & Thaler, 1991). From a developmental perspective, children’s concept of ownership is thought to arise from extending their sense of self to objects (Humphrey, 1992; Rochat, 2010). Indeed, Diesendruck and Perez (2015) recently demonstrated that TD children treat owned objects as extensions of the self by 5 years.

Knowing that you *own* an object is contingent on forming and retaining an invisible, socially meaningful, association with the self. This knowledge demands an awareness of the self as continuous in time (in conjunction with the object) and an understanding of ownership as a social construct (Fasig, 2000). However, many children with ASD experience impaired awareness of the psychological self (Frith, 2003; Lind, 2010). It is well-documented that individuals with ASD have difficulty using first person pronouns (e.g. “I” and “me”; Jordan, 1996; Lee, Hobson, & Chiat, 1994; Lind & Bowler, 2009), and have diminished awareness of their emotions and mental states (e.g. Ben Shalom et al., 2006; Hill, Berthoz, & Frith, 2004; Silani et al., 2008; Williams & Happé, 2010). These children also show impaired memory for personally experienced events and impoverished knowledge of personal facts (e.g. Bruck, London, Landa, & Goodman, 2007; Goddard, Howlin, Dritschel, & Patel, 2007). These findings indicate that the self does not provide a robust organising structure within the memory of children

with ASD, reducing their ability to tag information as self-relevant and inhibiting their development of an extended self-concept (Lind, 2010). These deficits may diminish children’s preference for self- (vs. other-) owned objects, potentially nullifying the mere ownership effect.

As ownership knowledge is acquired from one’s culture via interactions with others (Kanngiesser, Rossano, & Tomasello, 2015; Sparks, Cunningham, & Kritikos, 2016), diagnosis-defining deficits in social-cognition may also hinder developmental understanding of this convention (e.g. Bushwick, 2001). It is well documented that children with ASD experience difficulties interacting with others and show reduced social motivation (American Psychiatric Association APA, 2013; Chevallier, Kohls, Troiani, Brodtkin, & Schultz, 2012). Compared with TD children, those with ASD spend less time engaged in social interactions with peers (Bauminger et al., 2008), are less likely to collaborate (Aldridge, Stone, Sweeney, & Bower, 2000; Carpenter, Pennington, & Rogers, 2001; van Ommere, Begeer, Scheeren, & Koot, 2012), and are less likely to reciprocate in naturalistic interactions (Channon, Charman, Heap, Crawford, & Rios, 2001; Hadwin, Baron-Cohen, Howlin, & Hill, 1997; Joseph & Tager-Flusberg, 2004; Klin et al., 2006; Ozonoff & Miller, 1995; Wimpory, Hobson, & Nash, 2007). It is also widely acknowledged that children with ASD have fundamental impairments in Theory of Mind (e.g. Baron-Cohen, 1995; Baron-Cohen, Baldwin, & Crowson, 1997). As a result of these difficulties, children with ASD may have increased difficulty tracking and mentally representing invisible relationships between owners and their property.

To date, a single adult study has investigated the impact of ASD on ownership-related cognition. Grisdale et al. (2014) asked adults with autism and neurotypical controls matched on verbal ability, non-verbal functioning, and chronological age to sort pictures into two baskets: one belonging to the participant, and one belonging to the experimenter. Participants’ memory for the pictures was then tested via a surprise recognition task. While the TD adults demonstrated significantly more accurate recall for pictures belonging to them than the experimenter, adults with ASD recognised self- and other-owned pictures with equivalent accuracy. This suggests that processing objects in relation to the self may not influence cognition in adults with ASD, as it does for TD counterparts. However, no prior research has investigated how ASD impacts ownership understanding or related effects in children. Therefore, an important and highly novel goal of this research is to establish whether the influence of ownership on property preferences and valuations is atypical in children with ASD.

For the first time, the present study examined whether children with ASD display mere ownership effects. In Experiment 1 we investigate whether mere ownership influences preferential biases towards objects, plus the ability to track owner-object relationships, via a resource trading paradigm. Children with ASD and TD controls were randomly assigned a gift to keep, before being offered the chance to trade for one of two alternatives (the remaining gifts were taken by the experimenter and a confederate). Over several trials, we recorded how frequently children traded, and how accurately they tracked owner-object relationships. We predicted that mere ownership of gifts would not confer immaterial value for children with ASD due to impairments encoding information in relation to the self (Lind, 2010). Thus, we expected them to trade significantly more frequently than TD controls, who we expected to show a strong preference for the initially endowed gift (Harbaugh et al., 2001). We also anticipated that impairments in social interaction in ASD (APA, 2013) may reduce children’s ability to accurately track owner-object relationships.

In Experiments 2 and 3 we explore how children with ASD and TD controls value self- and other-owned property. In particular, we test whether these populations consider *their* toys to be more desirable than toys belonging to others. We also assess whether children ascribe higher value to their toys than identical copies, and probe their willingness to trade for these copies. Crucially, the results of this study will advance the ownership literature by providing new insight into how fundamental attitudes to property are impacted by ASD (a highly prevalent

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